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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,958	09/10/2003	Jiann-Chang Lo	42P15593	5862

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EXAMINER

GOLUB, MARCIA A

ART UNIT PAPER NUMBER

2828

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,958

Applicant(s)

LO ET AL.

Examiner

Marcia A. Golub

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) 5 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 05/04/2005.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION***Drawings***

The drawings are objected to under 37 CFR 1.83(a) because they fail to show "actuator" as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

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of the following is required: The specification is referring to a TEC as being an actuator, while the claims refers to the TEC as being a tuning element. Further definition of what the applicant means by the term "actuator" is necessary.

Claim Objections

Claims 5 and 19 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 5 and 19 recite the same limitations as claims 4 and 18 and do not add any new limitations to the claims they depend on.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-7, 9-21, and 23 are rejected under 35 U.S.C. 103(a) as being obvious over Chapman et al. (U.S.Pat: 6,661,814) and Turner et al. (U.S.Pub. 20020145955).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an

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invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding **claims 1-7, 9, 15-21, and 23** Fig 6 of Chapman discloses:

"A system, comprising: an external cavity diode laser (ECDL) [600]; an actuator [606, 604, 530] to drive a tuning element [F1, F2] of said ECDL and a controller [520];

wherein said tuning element comprises a thermo electric cooler (TEC) [518];

wherein said tuning element comprises one of etalons and filters [F1, F2].

wherein said error signal [302a, 302b, 302c] is derived from a dither signal [522,525] to an optical path length modulating element [512];

wherein said optical path length modulating element comprises a Lithium Niobate (LiNbOa) [512] phase modulator;

wherein said controller comprises one of a lead/lag controller and a Proportional Integral Derivative (PID) controller [column 13 line 49];

Chapman does not disclose that the controller comprises a high bandwidth mode for seeking a new target frequency and a lower bandwidth mode for tracking the

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target frequency, said controller to initially drive said actuator in said high bandwidth mode and then in said lower bandwidth mode when an error signal associated with a target frequency is within a threshold range;

wherein said high bandwidth mode drives said actuator with a first power level and said lower bandwidth mode drives said actuator with a second power level, said first power level greater than said second power level;

wherein said first power level comprises a higher power and said second power level comprises a lower power.

However, paragraph 171 of Turner discloses a method for coarse tuning and fine tuning a laser, wherein the power can be reduced to a low power mode while in tracking state [corresponding to a low bandwidth mode] or increased to a high power mode when in seeking state [corresponding to a high bandwidth mode].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Turner into the device of Chapman by controlling the tunable laser in coarse-tuning mode by applying high power to the tuning element and in fine-tuning mode by applying low power. The ordinary artisan would have been motivated to modify Chapman in the manner set forth above for at least the purpose of minimizing the power dissipated by the controller and preventing the tuning element from overheating.

Regarding **claims 10, 11, 13, and 14**, the apparatus disclosed above with regards to claims 1-7, 9, 15-21, and 23 discloses the functions and limitations of the method claims 10, 11, 13, and 14.

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Regarding **claim 12**, Chapman and Turner disclose everything claimed, as applied above, in addition a voltage signal supplied to a phase modulator wherein said voltage signal comprises about a sine-wave signal at a constant frequency. (column 8 lines 60-61 of Chapman)

Claims 8 and 22 are rejected under 35 U.S.C. 103(a) as being obvious over Chapman and Turner as applied to claims 1 and 15 above, and further in view of Crowder (U.S.Pub. 20020075918).

Regarding **claims 8 and 22**, Chapman and Turner disclose everything claimed, as applied above, but do not disclose a controller wherein said controller in said high bandwidth mode comprises a Bang Bang controller or an open loop controller.

However, Crowder discloses using an open loop controller to control the wavelength of the laser. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Crowder into the device of Chapman and Turner by making the controller and an open loop controller. The ordinary artisan would have been motivated to modify the references in the manner set forth above for at least the purpose of providing greater stability of the optical output wavelength and power over the operating lifetime, as well as providing greater stability over a wider range of ambient environmental conditions.

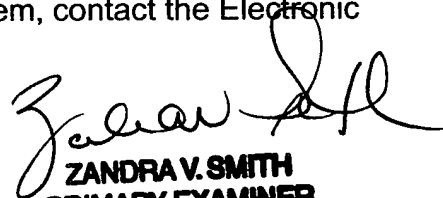
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Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-0218. The examiner can normally be reached on M-F 8-5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ZANDRA V. SMITH
PRIMARY EXAMINER

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